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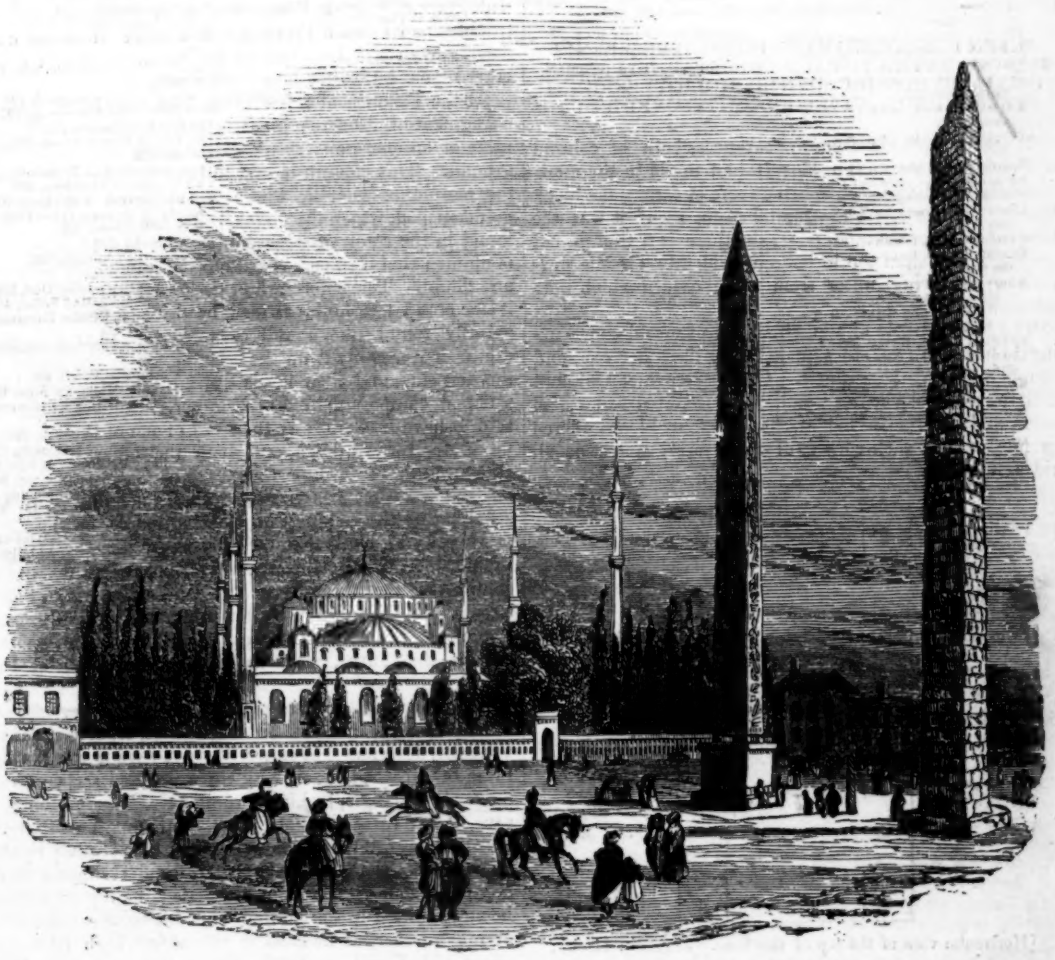
THE AT-MEIDAN AND ITS PILLARS.



[From a Correspondent.]

THE At-Meidan, or antient race-course, of Constantinople, is an oblong space of ground of 500 paces long by 100 broad, but that portion of it which is comprised within the paved causeways that surround it, and which, from the nature of the ground, seems to be the only part fit for such purposes, is only 240 paces long by 86 broad; and this explanation will partly reconcile the statements of Wheeler and Hobhouse, the former of whom says it is 550 paces by 120, and the latter 250 by 150. I, however, measured it carefully within the causeways, and was followed by a Greek whose pace was the same as my own (27 inches), and we both made it 240 by 86, which in round numbers may be called 550 by 200 feet. On the one side of this open space stands the splendid mosque of Sultan Achmet, with its six tall slender minarets peeping from the foliage surrounding the domes and walls; on the opposite side, a gilded and gaudy hospital; while the two ends are covered with shabby and ruinous buildings. Towards one of the ends stands the obelisk of Theodosius, the square pillar of Constantine Porphyrogenitus, and, midway between them, a fragment of the brazen column which is said to have supported the Delphic tripod.

From each corner of the At-Meidan there are streets issuing, which lead to the different quarters of the city, and it is undoubtedly the best place in Constantinople for a public meeting of the people, consequently it has always been, in any popular tumult, the general rendezvous of the insurgents. Two trees are still to be seen, nearly opposite to the pillars, between which the headless body of Bairactar was suspended by the feet, on the 19th of November, 1808, during the tumult raised by the Janissaries at the commencement of the late sultan's reign.

The obelisk and the pedestal upon which it stands are two half monuments of an incongruous character, that chance seems, in one of her caprices, to have thrown together. The obelisk is of the same form, size, and ap-

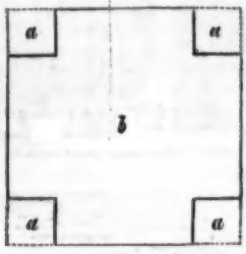
pearance as the one lately brought from Luxor, in Egypt, and erected at Paris, and, from the hieroglyphics with which it is covered, evidently does not belong to any country in Europe. It is formed of Theban marble, and is of a brownish red colour; it stands upon a pedestal 15 feet high, and is itself 75, making in all 90 feet. The breadth at the bottom of the obelisk is 7 feet, and below the level at the top 5 feet. The pedestal is the work of another people and another æra, and appears to have been the base of some other monument connected with the ancient sports of the place. It bears on one side, at the bottom, a Latin inscription, and on the opposite side a Greek one to the same import. The Latin one is as follows :—

DIFFICILISQVONDAMDOMINISPARERESERENIS
IVSSVSETEXTINCTISPALMAMPORTARETYRANNIS
OMNIATHEODOSIOCEDVNTSVBIOLIQVEPERENNI
TERDENISSICVICTVSECODOMITVSQVEDIEBVS

It seems probable from appearances, both of column and pedestal, that all Theodosius had to do in the affair was only to set up—not to bring there or form—the block bearing his name. The pedestal seems as if it was the base of a fountain: on one side there is a trough, cut perpendicular from top to bottom, evidently for the purpose of conveying water from some cistern which does not now exist near it.

The base consists of a square block of marble, measuring 11¼ feet on two sides, and 12 on the other two, and stands 3 feet above ground. On the centre of this, but still the same block, is a smaller square, of 6 feet on all sides, and 2 feet in height, having four blocks of red granite, one at each corner, of cube form, 2 feet on all sides, thus :—

[Perpendicular view of the base. *a*, granite blocks; *b*, marble block.]



[Horizontal view of the top of the base. *a*, granite blocks; *b*, marble block.]

On the top of this stands another huge marble block, of a cube form, 8 feet in height, and sufficient in breadth and width to cover the under block, as well as the corners of granite. This has a plain capital, upon which is placed, about two feet from the margin of each corner, a cube block of brass, measuring 22 inches upon each side, so stationed as to receive the four corners of the obelisk, leaving a space under it sufficient for any one to climb up, and, by getting under it, show his portrait out of each side.

These two marble blocks are covered over with sculpture in bas-relief, of the most exquisite kind. The base, besides the inscriptions on two sides, has, on the other, two representations of the races, on foot, on horseback, and in chariots, as also a view of the obelisk itself lying on the race-ground. The upper block is filled with figures of umpires, judges, soldiers, musicians, and dancing-girls; in fact, so much does every part of it refer to games and sports, that it seems as if it must have been a fountain or monument, shading or supporting the place where sat the umpires of the race-course.

Tournefort says there is upon the pedestal a representation of the machinery by which the obelisk was raised; but his eyes must have deceived him, as there is not now the slightest vestige of such, nor any space from which it could have been broken off. Little, however, is actually known of either the column or its pedestal, but it merits the attention of the antiquarian, as it is the most perfect specimen of sculpture now in Turkey, and superior to any bas-relief in the museums of France or England; and yet it is perfectly exposed, and may be chipped with impunity by any one who is disposed to take the trouble, and I saw a Frank knock a piece off one of the figures with the iron end of his walking-stick, for no other reason but to try how hard it was.

At the distance of a few yards from the obelisk stands a fragment of a brazen pillar, which exactly resembles a piece of an enormous ship's cable stuck upright in the ground. This column is said to have been brought from the temple of Delphi, where it supported the famous golden tripod, which the Greeks, after the battle of Platæa, found in the camp of Macedonius, and Mr. Hobhouse is of opinion that Gyllius has established its identity without any doubt. Tournefort, who saw it in 1700-2, says that it stood "15 feet high, formed by three serpents twining spirally round like a roll of tobacco; their contours diminish insensibly from the base, as far as the necks of the serpents, and their heads, spreading on the sides like a tripod, compose a kind of chapiter. Sultan Mourat is said to have broken away the head of one of them. The pillar was thrown down, and both the other heads carried away in 1700, after the peace of Carlowitz, and no one knows what has become of them;" but Gibbon, speaking of the conquest of Constantinople, on the 29th of May, 1454, by Mohammed II., says, "In the Hippodrome, or At-Meidan, his eye was attracted by the twisted column of the three serpents; and as a trial of his strength he shattered, with his iron mace, or battle-axe, the under jaw of one of these monsters, which, in the eyes of the Turks, were the idols or talismans of the city."

This story Gibbon gives on the authority of Thevenot, yet every traveller, remarks Mr. Hobhouse, from Gyllius to Wheeler, describes it as entire. Sandys says it was "a column of wreathed brass, with three infolded serpents extended in a triangle, looking several ways." Lady Montagu says, "the three serpents have their mouths gaping." Chishull says, "the heads were taken off privately by the servants of the Polish ambassador," and Hobhouse is of opinion that it is not known whether the top or bottom be now inserted in the ground—but his opinion cannot be of much value, as he calls it seven feet high (this was about 1812), and in 1838, when I visited it, I found it 12 feet 4 inches above ground, and tapering towards the top as Tournefort relates. It is hollow, filled with stones and earth, as can be seen from some fissures in the side of it. The diameter at the base is about twenty-two inches, and fifteen at the top; the folds of the serpent are about twelve inches each in diameter at the centre, of course smaller at the top and larger at the bottom, and it is matter of astonishment that it has not long ago been broken down and carried away for the sake of the metal.

Near to the brazen column stands the square pillar of Constantinus Porphyrogenitus, in apparently a tottering condition—so much so, indeed, that it appears certain to fall with the first breath of wind—yet it had the same appearance in the days of Tournefort, who pronounced it about to fall when he saw it. Its looks however belie it, as a closer inspection shows it to be of most solid and massy masonry, each block of stone riveted to its neighbour with an iron rod. It has been robbed of

its coating of burnished brass plates, the square holes that attached them covering almost every marble from top to bottom. The base measures 10½ feet in breadth and three in height from the ground; the pillar itself is 8½ feet in breadth, and about 120 feet high; time and the elements have robbed it of almost all its mortar, and to this may be ascribed its tottering appearance, as the stones at first look ready to tumble down for want of something to hold them together; they are marble, granite, and soft stone, mixed indiscriminately, and in many of the chinks, half way up and near the top, the vine twig seems flourishing and green as in a vineyard. Tournefort, in describing it a century and a half ago, remarks, "The tip is fallen, and the rest cannot long hold together"—yet the *half* of the tip is still there, and will, in all probability, still be there, when the palaces surrounding it on every side will be destroyed and forgotten.

Until lately, the At-Meidan was every Friday the scene of horse-racing, feats of strength, agility, &c. &c., but these have mostly fallen out of use—last Beiram morning it was crowded however with sports and gambolers—but alas, the spirit of the olden time was not there, and the exhibitors seemed more like warriors afraid of their own shadow, than the descendants of those who fought and won Thrace.

Sheep in California.—The sheep in California, as well as in all the other parts of Spanish America, are of a bad breed, and their wool of the very coarsest quality: the whole seem to be exactly of the same kind. It is strange, that while in Spain the finest-woolled sheep in the world—the merinos—have so long existed, an inferior breed, producing the coarsest wool, should have been carried to their colonies. Perhaps the propagation of the merinos, like the grape, was discouraged or prohibited in the Americas, in order, as was the policy of the mother-country, to give the monopoly to the flocks of Estremadura, as well as to the vineyards of Catalonia. It is extraordinary, however, that some one should not have introduced into any of those vast countries a better breed, even in the time of the Spanish government; and still more extraordinary, that since the revolutions, which have removed all obstacles, no amelioration of this breed has taken place. There are large flocks of sheep in Chili; immense numbers on the table-lands of Mexico, which abundantly supply the capital with mutton; and myriads scattered over the middle or southern republics, all of which, as well as those of California, are of the same breed, and their wool invariably exceedingly coarse. It might be thought that in the tropical climates the temperature and other circumstances may have changed the quality of the fleeces; but in Upper California the latitude nearly corresponds with that of Estremadura, and in some parts exactly so; yet the quality of the wool is equally bad there as in the equatorial latitudes of Peru and Colombia. The British settlements of New Holland and Van Diemen's Land correspond with the latitudes of Chili and California. It is impossible to conceive a country more adapted to the breeding of sheep than Upper California; and if a good kind were introduced by intelligent breeders, the benefit would be incalculable.—*Forbes's California.*

The Bush-Rope.—A vine, called by the wood-cutters the bush-rope, on account of its use in hauling out the heaviest timber, has a singular appearance in the forests of Demerara. Sometimes you see it nearly as thick as a man's body, twisted like a cork-screw round the tallest trees, and rearing its head high above their tops. At other times three or four of them, like strands in a cable, join tree and tree, and branch and branch together. Others, descending from on high, take root as soon as their extremity touches the ground, and appear like shrouds and stays supporting the mainmast of a line-of-battle ship; while others, sending out parallel, oblique, horizontal, and perpendicular shoots, in all directions, put you in mind of what travellers call a matted forest. Oftentimes a tree, above a hundred feet in height, uprooted by the whirlwind, is stopped in its fall by these amazing cables of nature; and hence it is that you account for the phenomenon of seeing trees, not only vegeting, but sending forth vigorous shoots, though far from their perpendicular, and their trunks inclined to every degree from the meridian to the horizon. Their heads remain firmly supported by the bush-rope; many of their roots soon refix themselves in the earth, and frequently a strong shoot will sprout out perpendicularly from near the root of the inclined trunk, and in time become a fine tree.—*Waterton's Wanderings in South America.*

African Sheep.—The African sheep generally are covered with fur or hair, instead of wool; and when these skins are properly cleaned and dressed, and a number of them sewed together, they form a much warmer covering than could be made from any other materials. The boors, who are enabled by their immense flocks to select only such as have a smooth fur, obtain a handsome *kombaars*, or coverlet, so unlike what a European would imagine for sheep skins, that many persons would not even guess from what animal it was made. Those which I have brought to England have often been viewed as the skin of some unknown animal. Few *furs* can be more beautiful than the selected skins of lambs thus prepared; and if prejudice did not stand in the way, I think they might supplant many which are seen in our furriers' shops. Such a branch of commerce might prove not unimportant to the colonists or to the colony in general; it might open a new source of profit, and turn to better account those innumerable flocks, for the rearing of which the greater part of the Cape of Good Hope seems by nature peculiarly adapted. Since the Cape, it seems, is not so fortunate as to possess a climate and herbage, like New South Wales, suited for the growth of the finest wools, it may prove equally favoured in having such as to give to its sheep a soft and useful fur.—*Travels in Southern Africa, by W. J. Burchell.*

Savage Life.—Owing to the late unsettled state of the country, the present is a time of great distress. Many hundreds of people are living in the bushes on roots, without any fixed habitation, and almost driven to desperation from extreme distress. In riding a few miles, Mr. Painton counted above three hundred people seeking roots for food: there are a great many eatable roots which will support life, but they are not very nutritious; they cause the people's bodies to swell to an enormous size, and the striking contrast between their emaciated limbs and swollen bodies is very painful to behold. In consequence of this scarcity of food, many men are driving from their kraals their least-valued wives, and the old and infirm, who cannot go far to seek roots, are left to starve. A great many people, especially women, come every day, hoping "to be picked up." We do what we can for the most distressed objects, but our stock of food will require very good management, and some self-denial on the part of ourselves and people, in order to make it hold out until the harvest-time, which is yet six weeks or two months off. . . . Three weeks ago, Faku's sister-in-law died; four persons were immediately tortured, and then beaten to death by sticks, for having caused her death by witchcraft. The charge was substantiated by the following evidence: "The poor creatures had been seen to wave their hands as they passed by the sick woman's kraal." Six weeks after a great captain died near the Umgazi; six persons were tortured and then burnt to death, on the same charge, on similar evidence: the witch-doctors pretended to find a piece of wood called chaka buried in their kraal, which, as it rotted, would cause the deceased to rot away: they were accused also of having burnt a lizard in their garden, in order that the deceased might have no corn to eat, and so die of hunger. In addition, John Burton, my interpreter, informed me, "that on his return from Butterworth (to which place he accompanied me when I went to the district meeting), he arrived in the evening at a kraal near the Bashee, and found the place in great confusion. On inquiring the cause, he learned, that food being scarce, the people had buried a child of seven years old alive, because they did not like to see it starve before their eyes: the grave being not very deep, and the soil light, the child struggled hard, and its crying was heard by the mother, whose feelings prompted her to dig the child up again: the people were holding a consultation as to the propriety of burying the child again. John Barton reasoned with them, gave up the little food he had, and the people promised to let the child live.—*Steedman's Wanderings in South Africa.*

THE HISTORY OF A COTTON GOWN.—No. I.

THE habitual use of the things which surround us leads to two very opposite effects in different instances: in some, we become familiarly acquainted with almost every circumstance connected with them; while in others, the very familiarity with them in their complete state makes us forget or neglect the steps by which they arrived at it. It is probable that the *materials of clothing* lie in the latter predicament. If we say that nineteen-twentieths of such materials have originally had the form of slender fibres, and have once possessed either animal or vegetable existence, we shall perhaps not be far from the truth; and yet such a statement would excite surprise in many. Our cottons, calicos, broad-cloths, worsteds, velvets, merinos, silks, linens, and all the extensive varieties of each of them, are prepared from one or other of *four* substances, viz.: the short fibres contained in the seed-pod of the cotton plant; a glutinous fibre elaborated from the body of the silk-worm; the woolly fibres which cover the back of a sheep; and a sort of fibrous bark covering the stem of the flax-plant. All these fibres, of which two kinds are procured from the animal and two from the vegetable kingdoms, are worked up by man into a fabric or extended substance, from which garments of every form and size can be made, and of a texture varying from that of a gauze veil to that of the thickest garment for rough weather. We will, on the present occasion, select one of these four classes of materials, viz., *cotton*, and endeavour to convey a general notion of the processes by which it acquires the forms so familiar to us.

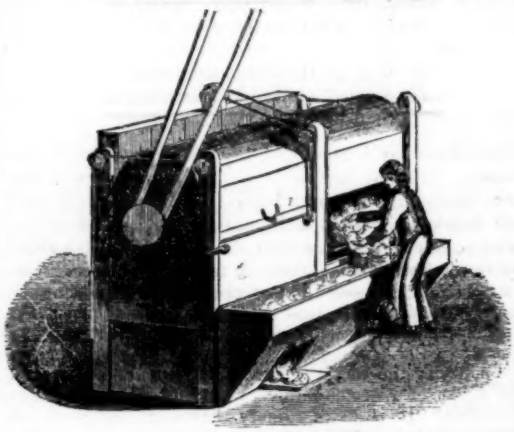
The reader, by referring to 'Penny Magazine,' vol. i., p. 156, will find a description of the cotton-plant, and of the manner in which the cotton is gathered, partially cleaned, compressed, and packed in bags for shipment. We will take up the subject in continuation, and suppose the bales of cotton to be safely landed at Liverpool. As Manchester is the great seat of our cotton manufacture, Liverpool, the nearest port to it, has become the principal place at which cotton is landed from foreign countries. From thence it is conveyed to Manchester on the railway connecting the two towns, and placed in the hands of the manufacturers. Of the extent to which this intertraffic is carried on, we may perhaps have something to say hereafter.

On opening the bale, then, the materials for our cotton gown are found to consist of whitish fibres, matted and clotted together in consequence of the severe pressure to which they have been subjected. But in order that the fibres may be united into one continuous thread or *yarn*, with which the weaver is afterwards to work, it is indispensable that they should be disentangled and straightened as much as possible. For this purpose the cotton is spread out, and subjected to a great variety of processes. In the first place, it must be *sorted;* for not only do cottons of different countries differ in quality, but that kind which is required to form the *warp* (or the long threads) of a piece of cloth is somewhat different from that selected for the *weft* (or cross-threads).

When the cotton is sorted, a task usually performed by women and children, it is then disentangled and freed from seeds and impurities by one or more of several processes called *cleaning*, *picking*, *scutching*, *willowing*, *blowing*, &c., some employed in one factory, some in another. The finest cotton is generally opened and picked out by hand-labour of women and children. It is placed on a table covered with a kind of net or mesh-work, and, after being lightly beaten with slender rods, the knots and other impurities are removed by the fingers. This is called *picking*. Another method is by *scutching*, in which the cotton, after being spread out on an elastic table, is beaten by a series of parallel rods, by which the clotted fibres are disengaged, and the cotton seeds and other impurities fall through the open meshes of the elastic table. But the most general mode of effecting the first

[Picking Cotton.]

disentanglement and cleansing of the cotton is by a machine called the *willow*, represented in the annexed cut. A cylinder (seen separately in the lower part of



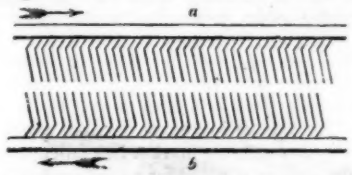
[Willowing Machine.]

the cut) has several teeth or spikes on its surface, and it revolves inside the machine in near communication with other spikes. A door is opened, and a boy puts in an armful of cotton, and closes the door again. The cotton is then thoroughly disentangled by being caught between the teeth during the rotation of the cylinder, and the seeds and impurities fall through a kind of sieve to the bottom of the machine. After it has been worked about for a few seconds, the boy opens the door, removes the cotton which has been disentangled and cleansed, and puts in a new supply. The inferior cotton wools are at the present day frequently *willowed* by a remarkable machine, which feeds itself, or draws in the cotton from a sort of stage placed close to it, thoroughly disengages it during the passage down or through the machine, and finally discharges it in a fine fibrous state at the bottom.

When the cotton has, by either of these modes, been disentangled and partially freed from impurities, it is subjected to the processes of *batting* and *blowing*, the object being to loosen still more the fibres of cotton, and to carry off the remainder of the dust through sieves. The batting (or beating) is produced by flat bars, carried rapidly round, which strike with their faces against the cotton fibres; while the blowing (or sifting) is effected by a sort of blowing-machine, or revolving fan, which removes the dust from the cotton. Where the very finest cotton (called *sea-island* cotton) is used, batting and blowing are often dispensed with.

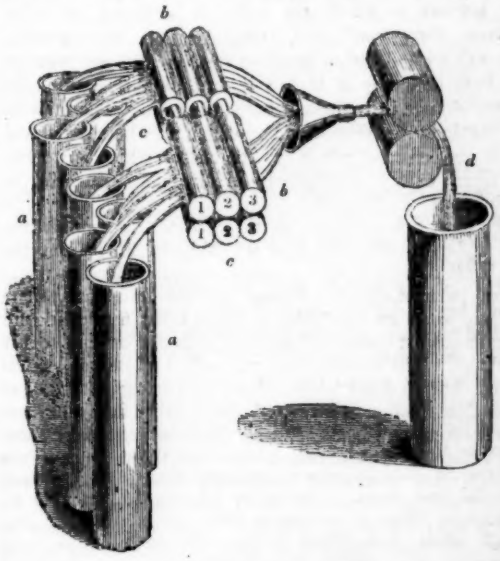
The reader must now bear in mind, that what has been

done to the cotton has *disentangled* and *cleansed* it, but not *straightened* the fibres; to effect this is the object of the next process, called *carding*. We all know how easily and effectually the hair may be straightened by the use of a comb or a brush. Now however intricate the cotton-manufacturer's *carding-engine* may be in appearance, its action is in reality midway between that of a comb and of a brush. A number of wires, formed and bent in a precisely similar manner, are inserted into a frame or block at one end, and present their sharp points at the other. This forms a kind of wire-brush; and upon being placed with the wires uppermost, a little cotton placed upon their points, and another similar wire-brush laid on the cotton, the movement in opposite directions of the two brushes will *brush* or *comb* out the the fibres of cotton, and lay them in a parallel and smooth form. This mode of action will be clearly understood from an inspection of the annexed little cut, which may



be considered as representing a profile or section of the brushes. If some cotton be placed on the wires of the lower brush (*b*), the upper brush (*a*) be laid upon it, and both brushes be moved in the direction of the arrows, it is easy to comprehend that the teeth or wires will straighten and make parallel the fibres of cotton. This operation is called *carding*, and the two brushes are termed *cards*. Originally the cards were employed nearly in the form here represented; but about seventy or eighty years ago, the cotton-manufacturers, particularly Mr. Peel (the grandfather of the present baronet), Mr. Hargreaves, and Mr. Arkwright, succeeded in fixing the cards to the surface of a cylinder, and to a concave surface applied close to it. By making the cylinder revolve continuously, the cotton, which is placed upon its teeth, becomes combed out or carded in a very complete manner. By subsequent improvements made in those cylinder-cards, not only are the cotton fibres combed out straight, but they are at the same time collected together in a narrow flattish roll, called a *sliver*. The fibres of this sliver have just coherent strength enough to hold together. It will then be understood that the operation of *carding* produces three different changes in the appearance of the cotton: the first is, to comb out and parallelise the fibres; the second, to collect it into a sort of sheet so exquisitely fine as to have obtained for it from one writer the figurative title of "woven wind;" and the third, to collect it into a small narrow sliver, midway between a ribbon and a roll in appearance. The carding-engine of modern days, by which all this is effected, is an exceedingly elaborate machine. The cards contain usually about twenty teeth to an inch in length.

But delicate and beautiful as is the effect produced by the carding-engine, the fibres composing the slivers of cotton have still much to go through before they will be in a fit state for the spinners. In the first place, though the cards have straightened most of the fibres, they have had the effect of *doubling* some of them by catching them in the middle: these doublings must be rectified. Again, although the fibres are arranged tolerably parallel by the carding-engine, yet they are not sufficiently so for subsequent purposes. The sliver, likewise, although delicate, contains too many fibres in thickness: one hundred feet of it contain nearly one pound of cotton. To remedy all these defects is the office of the *drawing-frame*, one of the most beautiful of Arkwright's inventions. It straightens the doubled fibres; it lays them as parallel to one another as possible; it equalises the quality of the cotton, by uniting many slivers into one, so as mutually to correct each other's defects; and lastly it draws out and elongates the spongy slivers or ribbons, so as to make them both narrower and thinner. All this is effected by drawing the sliver successively between three pairs of rollers, the two forming each pair being kept in close contact. The pairs are arranged side by side, so that after the sliver has passed between one pair, it is seized and forced through the second pair, and afterwards the third. Now if all these rollers revolved with equal velocity, the only effect produced on the cotton would be to flatten or stretch it out; but if the second pair revolve faster than the first, and the third faster than the second, it occasions the cotton to be *elongated* or *drawn out*. The second pair of rollers have a tendency to catch the fibres faster than they are liberated from the first pair, and therefore elongate them to make up the deficiency; the third pair act in like manner. And the very act of pulling or drawing the fibres in this way, also has the effect of straightening and laying them parallel. So important to the subsequent excellence of the woven cotton did Sir Richard Arkwright deem this process, that whenever any defective work was put out of hand, he used to impress on his workmen the injunction, "*mind your drawings*:" no good yarn could be spun unless the *drawing* of the slivers of cotton were properly performed. If one single sliver were attempted to be drawn until the suitable parallelism of its fibres were effected, the ribbon would soon become so excessively attenuated as to break; this is one of the reasons why many slivers are united into one during the process of drawing. The annexed cut will sufficiently show the more important parts of the



[Part of a First Drawing-Frame.]

[In this and the following cuts, those portions only of the machine have been given which are essential to the demonstration of the principles on which the several operations are performed. *a*, *a*, eight 'tubs' filled with 'ends' of cotton; *b*, *b*, six smooth wooden rollers covered with leather; *c*, *c*, similar set of fluted iron rollers. Rollers 1 move two-thirds slower than 3; and 2, at an intermediate rate. From this it results that the 'last end,' *d*, contains the substance of 512 of the 'ends' first drawn.]

operation. Several slivers, passing from a row of cans or 'tubs' in which they are deposited by the carding-engine, are caught between three pairs of rollers revolving with different velocities; they are then all united into one, brought into a small space by passing through a funnel, slightly compressed between a pair of rollers, and lastly received in a can. The operation of drawing is generally performed several times in succession.

After the slivers of cotton have passed through the

drawing-frame, they go through the operation of *roving*. The object of this is, to draw them out to a greater degree of thinness, and at the same time to impart to them a slight degree of *twist*, sufficient to enable them to be wound on small pieces of wood called *bobbins;* for in their parallel state they are too weak to allow of their being wound. This is performed by machines of various forms, called the *revolving can-frame*, the *tube-roving frame*, the *bobbin and fly-frame*, &c., some of which are very complicated. The cotton now obtains the name of *roving*, and some of the rovings are so fine, that one hundred feet of them will weigh but eighty grains: the texture being uniform in every part.

We have thus traced the materials of our cotton gown through the processes of sorting, picking, beating, carding, drawing, and roving. The next paper will introduce us to the labours of the spinner.

THE MENDIP HILLS, CHEDDER CLIFFS, AND THE CAVES OF SOMERSETSHIRE.

THE Mendip Hills form rather an extensive range of uplands, for mountains they can scarcely be called, in the north-east division of Somersetshire. The principal range extends from the neighbourhoods of Banwell and Compton Bishop towards the west, or from within six or eight miles of the Bristol Channel, to the vicinities of Crosscombe and Ashwick eastward, or, as some will have it, to a much greater extent, since the eastern extremity does not appear ever to have been accurately defined, some of the uplands stretching away into Wiltshire. The principal range, or that included within the limits here mentioned, varies from eight to four miles in breadth, while the length may be estimated at about twelve or fourteen miles. The elevation, though rarely exceeding six or seven hundred feet, is quite sufficient to produce a change of both soil and climate, and hence also a change in the productions of nature The mineral productions are various, among which may be enumerated lead, copper, and calamine, the last of which is worked to some extent, particularly in the neighbourhood of Shipham.

In most cases, except in the ravines that run up into the uplands, the ascent of the Mendip hills from the lowlands on either side is pretty abrupt, indeed in many cases particularly so. Except in a few situations, there is little wood on the sides of these hills, they being for the most part bare and covered with a poor and scanty herbage. The summits are partially enclosed and cultivated, but in some places there are extensive tracts of unenclosed common lands. A few patches here and there are covered with heath, but for the most part short natural grasses and mountain-mosses are the product of the uncultivated portion of the Mendip hills. The upland or hill farms, as they are called, are better calculated for grass than for grain, although many of the farmers of late years have turned their attention more to the raising of grain than formerly; but, owing to their elevated situation, in backward seasons the crops rarely get thoroughly ripe before the early frosts come on. These hills afford middling pasture for sheep, and to this purpose unenclosed parts are mostly applied.

From the top of the Mendip hills the views are various and extensive. Looking westward on a clear day, the whole intermediate country towards the Bristol Channel is embraced; the Channel itself, from opposite Bristol as far westward as North Devon, with its islands (or holmes); and beyond that æstuary, the coast of South Wales, including a considerable extent of Monmouthshire and Glamorganshire, interspersed with cultivated fields, whitened cottages, and backed by mountains in the extreme distance, completes this splendid picture. Eastward the view is nearly as extensive, for it is only terminated by the hills bordering upon Dorsetshire and the western division of Wiltshire. The city of Bath cannot be seen, from its low and peculiar situation; but Wells is almost in the immediate foreground; Shepton Mallet, somewhat more distant, and Frome more distant still, but lying within the confines of Somersetshire. Few districts of country present a more luxuriant aspect than the one under observation, since it embraces by far the richest district of the fertile county of Somerset. No great road crosses these hills, except the road from Wells to Bristol, and that is of a secondary class, so that few travellers, except those who go for the express purpose, have opportunities of gazing upon the varied and splendid views afforded from the different summits of the Mendip hills.

Thus far the general features of the Mendip hills have been discussed; but besides these, they possess other objects of attraction, amongst which are Chedder Cliffs, and the romantic and curious caves that have been discovered in several distinct sections of this hilly region. The little town of Chedder (which gives name to those cliffs) is situated close under the south-west brow of the Mendips, adjoining an extensive tract of level luxuriant meadows, and has long been noted for its cheese, sold in the markets under the popular name of Chedder cheese. Formerly Chedder was a market-town, but although it has a neat market-cross, and a fine old parish church with a beautiful tower, the market has fallen into disuse; and all that Chedder is noted for at present are its cheese, its paper manufactures, and its cliffs, including its caves and springs of beautiful water.

The town, which contains about two hundred houses, is situated very romantically: a portion of it is close to the mouth of the cleft or fissure in the side of the prominent hill where these famous cliffs commence. The chasm, which runs across the south-west or southerly ridge of hill, extends in a north-easterly direction for more than a mile, being, however, exceedingly serpentine, when it slopes away in gentle declivities, one valley diverging towards the right hand and the other towards the left. Near the entrance into the passage through this chasm are several copious springs of pure water, which, almost immediately uniting, form a river of respectable size; and, before it has run a course of more than a few hundred yards, it affords admirable water-power to five or six mills, three or four of which are paper-mills, and the others grist-mills. At one period a dozen mills were in operation at this place, the whole of them driven by this new-born but impetuous torrent. After the Chedder, for so this stream is named, has wound its way for a considerable distance through the adjoining level meadows, it falls into the river Axe.

These cliffs probably have no parallel in the whole island of Great Britain. Immediately above the springs of water already spoken of, the noise of which, falling over ledges of rocks, tends greatly to increase the general excitement, the chasm becomes both narrow and exceedingly winding; and although a road has been opened through this pass, and thence across the whole breadth of the Mendip range, the proximity of the walls of rock is in some places so close as to leave scarcely room for two wheel-carriages to pass each other. The rock is composed of various species of limestone. In some places it is exceedingly hard and ponderous, and of a dark colour, containing iron to a considerable extent; while in other situations a coarse species of marble presents itself, traversed with veins of dusky red and brown. Pursuing the winding road for some little distance, the cliffs rise on either hand in the most singular and picturesque forms, some of them being nearly 800 feet high, and terminating in craggy cones and pinnacles. Several of the rocks on the right hand are perpendicular, or nearly so, to the height of 400 feet, presenting to the astonished spectator the idea of stupendous walls and battlements of some vast castle or fortress. On the left the rocks are not quite so lofty, but some of them are equally grand, and, in two instances in particular, they hang over the road in

threatening aspect; while others appear separated from the main and solid body, and ready at every instant to descend on the heads of those that have the temerity to venture beneath them. In several instances the projections of the rock on one side stand out, as it were, opposite to corresponding hollows on the other, thereby strongly indicating that this terrific gap was first formed by some extraordinary convulsion of the earth, the brow of the mountain having been riven asunder. In most instances, these cliffs, as will readily be imagined, are wholly inaccessible to the most adventurous schoolboy or prying antiquary. In some places, however, it is singular to witness the face of these tall and apparently solid walls of rock, interspersed with here and there a hardy shrub, ivy, dwarf yews, and sundry other sorts of natural productions.

Immense numbers of jackdaws are constantly flying about the middle and upper sections of the cliffs, for here it is that they build and breed in the most perfect security. Hawks too of different kinds make their aeries in these rocky fastnesses; and the visitor to this sublime scenery may constantly witness them sailing on steady wing in mid air, in all the security of an uninhabited region.

In the sides of the Chedder cliffs there are several caverns, some of which are of considerable magnitude, and contain many curious stalactical productions, spars, crystallizations, &c. In the large chambers, into which two of the caves in particular expand, the scene, when lighted up, is grand and awfully sublime; while the echoes and reverberations, even of the human voice, are truly astonishing. Indeed it is very probable that a great number of caves exist in this rocky defile through the hills, many of which would be discovered were the rubbish and rocky fragments, the accumulations of ages, cleared away from the bottom of the various precipices. One of these caves has been explored to a distance exceeding 300 yards, the general direction being north-east; while another, but recently discovered, and at the very commencement of the rocks, has also been explored to a very considerable distance.

Several small huts or cottages, perched against the wall of rock, allowing just sufficient space for the road to pass them, are seen at the entrance into the very gorge of this romantic chasm. These are inhabited by guides, or persons who are eager to undertake to conduct strangers to the most remarkable parts of the caves, as well as to those other parts of the cliffs that are accounted the most worthy of attention. They also collect specimens of the various sorts of stone, &c., which they do not fail to exhibit to every one that visits the cliffs, at the same time offering them for sale, and, like guides to curiosities in general, often render themselves rather obtrusively importunate.

Since the road that traverses the foot of these cliffs is exceedingly winding, and since no two sections of the pass resemble each other, the view is consequently ever varying, so that the place affords an immense variety of views of a picture well deserving the attention of such as have a taste for the sublime beauties of nature.

Nearly fifty years ago a cave was discovered on the opposite side of the Mendip hills to that on which the Chedder cliffs are situated. This cave is near the bottom of a deep dell that runs for a mile or two up into the mountain, and near to the village of Burrington, thirteen miles south-west of Bristol. In this cave many skeletons were found, some of which were of the human race, and in a tolerable state of preservation; whilst others were the skeletons of animals that were not known ever to have existed in this island. Several were perfectly imbedded in stone, some of which are now exhibited in the British Museum. About a mile west of the Burrington cave, and immediately under the brow of the Mendips, a large and beautiful spring gushes forth, covering a bed of from twenty to thirty feet in width close to the well-head, and then gliding quietly away through the plain below, on its way to the Bristol Channel.

The cave of Banwell, about a mile from that village, has been more visited since its discovery than either of those already spoken of. The opening to this cave is near the western extremity of an oval-shaped hill, and in the pleasure-grounds attached to a summer retreat belonging to the bishop of Bath and Wells. There are, in fact, at present two caves, both of which are within the very precincts of this episcopal residence. The main cave is entered within a few yards of the bishop's rural residence (which is nothing more than a tasteful thatched cottage of moderate size, situated on one extremity of a barren ridge, which money and good taste have converted into beautiful pleasure-grounds), and after several descents, windings, and openings into extensive chambers, is terminated evidently not far from the opposite side of the hill. The other cave was discovered in attempting to open a new entrance into the larger one, in order that strangers coming to explore it might not intrude so immediately upon the privacy of the bishop's cottage, although the entrance even to this latter cave is in full view of the windows of the drawing-room, and not more than forty yards distant from them. In digging away the loose earth between two rocks that presented an opening in the proposed direction, when the workmen had excavated to the depth of twelve or fifteen feet, they discovered an immense quantity of bones, that had been deposited there, as has since been stated by geologists, before the time of the Flood. A considerable portion of these bones have belonged to deer, elk, and animals of this class; but there are also the bones of wolves and bears, as well as those of the buffalo and elephant. Vast quantities of these bones have been taken away, a splendid collection remains in the hands of the proprietor of the cave, and yet there are large quantities remaining, walled up on all sides of the cave, and many more that yet remain mixed in the soil, that, it is presumed, has been washed into the lower part of the cavern, which a little more labour would recover from their resting-place of several thousand years. Except these bones, this latter cave presents nothing remarkable; indeed it extends but a short way under the hill in the direction of the larger one; for at the extremity of the den of bones a solid rock presented itself, so as completely to exclude the desired object of finding an easy communication with the principal cave by the route thus attempted to be opened.

RELIGIOUS EMIGRATION.

In the Tyrol, under the dominion of Austria, a number of families in Zillerthal had recently become converted to Lutheranism, and, agreeably to the constitution, had, in 1826, applied to be relieved from attendance at Catholic churches, and to have a priest of their own persuasion allowed to attend them. For several years this had been evaded, but in 1837 they received permission to expatriate themselves, and the king of Prussia agreed to receive and provide for them in his dominions, through the mediation of our late king William IV. The following is an interesting account of their arrival at their new settlement in Silesia, published in a translation by J. B. Saunders, of an account of them by Dr. Rheinwald, of Berlin:—

"At the mountain village of Michelsdorf, in the circle of Landshut, the exiles first trod their new father-land. They received their first welcome on the 20th of September, 1837, from the Protestant pastor Bellman, who was followed by the greater part of his flock. The train consisted of about a hundred and twenty persons. At its head advanced the fathers and mothers, tall and well-proportioned figures, wearing the well-known Tyrolese hat, and carrying umbrellas; otherwise habited in the simple costume of their country. Among all, it was easy to perceive that their dress had been newly provided for the journey. Earnest and still the procession moved forward; even the spectators, penetrated with sympathy, observed a deep silence: firm, tranquil resolution was expressed in the countenances of the

men, humble resignation in those of the women. These were followed by ten or twelve wagons carrying the aged and sick, women and children, as well as the most necessary articles of their moveable property. Then there came several small two-wheeled cars, drawn by their owners, containing their books, &c.

"About noon, on the twenty-third of September, the second train arrived, consisting of two hundred and eighteen persons, among whom was John Fleidl. They had traversed, in twenty-three days, about ninety German miles.* As during the last few days there had been an incessant rain, the travellers here halted some hours, in order to recruit themselves for the mountain-pass, and the remaining six miles of their journey. The countenances of all indicated the greatest exhaustion, and only the children were cheerful and joyous. Pastor Bellman stepped into the midst of the pilgrims, who, young and old, crowded round him with tears in their eyes, endeavouring to reach his hand and catch a glimpse of his countenance. Every eye was fixed upon him, glistening with emotions of joy and gratitude. One party that was encamped near the church having procured it to be opened, some of them entered: in silence they ranged themselves before the altar, when presently one of them perceived and drew the attention of his companions to a portrait of the king: with a general shout of the highest transport, they all rushed towards the picture, contemplating it with eyes beaming with tears of joy—it was, indeed, the likeness of one who, by his royal favour, had caused their gladness at that happy moment.

"On the evening of Saturday the 30th of September, the third division arrived, with six wagons and sixty-five persons. As the following day was to be the harvest festival, they were invited here to partake its rest. The overseers of the parish anxiously provided for their accommodation, and several of the Catholic householders also offered them a ready welcome. On the Sunday morning, they all appeared in the church, whither they were conducted by the clergy; they likewise attended the afternoon service, and all the other holy exercises. At two o'clock the next morning they passed through Hermsdorf, where the Protestant inhabitants prepared for them breakfast, on their way to Schmiedeberg.

"A few days later a fourth division followed, consisting of three families and other individuals, about thirty in number, who had not before been able to dispose of their farms and cattle, the whole followed by a throng of foot-passengers. Pastor Bellman relates that in his conversations with the travellers, 'they expressed their thankfulness to God; that, with the exception of some trifling ailments, they had all enjoyed perfect health; and that, notwithstanding the great number of those who were aged and infirm, they had not, contrary to the predictions of some of their friends, lost a single individual on the journey. There were among them many families of whose members not one remained behind, yet not a few in which parents from children, children from parents, and brothers and sisters, had been parted. Their separation must, indeed, have been in the highest degree painful, and gladly would they have remained in their beloved fatherland, had not their ardent desire to be able to serve the Lord, in the liberty of their own convictions, overborne all other considerations.'"

* A German mile is equal to four and a half English miles.

Results of Desultory and Continuous Labour.—The young natives of the interior of Australia usually carry a small wooden shovel, with one end of which they dig up different roots, and with the other break into the large ant-hills for the larvæ, which they eat: the work necessary to obtain a mouthful even of such indifferent food being thus really more than would be sufficient for the cultivation of the earth, according to the more provident arrangements of civilised men.—*Three Expeditions into the Interior of Eastern Australia, by Major Mitchell.*

MONTHLY CALENDAR.—JANUARY—FIRST MONTH.

Day of the Month and Week.	Day of the Year.	Sundays and Remarkable Days.	Sun rises.	Eq. Time. Clock bef. Sun.	Sun sets.	Moon's Age.	Moon rises.	Moon sets.
			h. m.	m. s.	h. m.		h. m.	h. m.
1 W	1	*Circumcision.*	8 9	3 37	3 59	26·4	5 m 29	0 a 46
2 Th	2	. . .	8 9	4 5	4 0	27·4	6 39	1 19
3 F	3	. . .	8 8	4 33	4 1	28·4	7 40	2 7
4 S	4	. . .	8 8	5 1	4 2	●	3 28	3 8
5 *Su*	5	2 *Sunday after Christm.*	8 8	5 29	4 3	0·6	9 4	4 20
6 M	6	*Epiph.*, Old Christ. Day.	8 8	5 56	4 4	1·6	9 31	5 39
7 Tu	7	. . .	8 7	6 22	4 6	2·6	9 50	6 59
8 W	8	. . .	8 7	6 48	4 7	3·6	10 5	8 19
9 Th	9	. . .	8 6	7 14	4 8	4·6	10 17	9 39
10 F	10	. . .	8 6	7 39	4 10	5·6	10 29	10 59
11 S	11	Hilary Term begins.	8 5	8 3	4 12	6·6	10 41	morn.
12 *Su*	12	1 *Sunday after Epiph.*	8 5	8 27	4 13	☽	10 54	0 21
13 M	13	Cam. Lent Term beg.	8 4	8 50	4 14	8·6	11 12	1 47
14 Tu	14	Oxford Lent Term beg.	8 3	9 12	4 16	9·6	11 34	3 16
15 W	15	. . .	8 2	9 34	4 17	10·6	0 a 8	4 45
16 Th	16	. . .	8 2	9 55	4 19	11·6	0 58	6 8
17 F	17	. . .	8 1	10 16	4 20	12·6	2 8	7 15
18 S	18	. . .	8 0	10 35	4 22	13·6	3 32	8 3
19 *Su*	19	2 *Sunday after Epiph.*	7 59	10 54	4 24	○	5 1	8 34
20 M	20	. . .	7 58	11 13	4 25	15·6	6 28	8 55
21 Tu	21	. . .	7 57	11 30	4 27	16·6	7 50	9 10
22 W	22	. . .	7 56	11 47	4 29	17·6	9 7	9 23
23 Th	23	. . .	7 54	12 3	4 30	18·6	10 22	9 34
24 F	24	. . .	7 53	12 18	4 32	19·6	11 35	9 45
25 S	25	*Conversion of St. Paul.*	7 52	12 33	4 34	20·6	morn.	9 56
26 *Su*	26	3 *Sunday after Epiph.*	7 51	12 46	4 35	☾	0 48	10 9
27 M	27	*D. of Sussex born 1773.*	7 49	12 59	4 37	22·6	2 1	10 25
28 Tu	28	. . .	7 48	13 11	4 39	23·6	3 14	10 46
29 W	29	. . .	7 47	13 23	4 41	24·6	4 25	11 16
30 Th	30	*King Charles I. Martyr.*	7 45	13 33	4 43	25·6	5 30	11 58
31 F	31	Hilary Term ends.	7 44	13 43	4 44	26·6	6 24	0 a 54

Meteorological Averages.

Barometer.	Ins.
Mean height	29·921
Highest	30·770
Lowest	28·890
Hygrometer.	°
Mean dew-point	34·3
Highest	59
Lowest	10
Mean dryness	1·8
Mean greatest do. of day	3·5
Greatest dryness	19
Thermometer.	
Mean temperature	36·1
Highest	52
Lowest	11
Radiation.	
Mean great. of Sun	4·4
Greatest power	12
Mean cold of terrest.	3·5
Greatest ditto	10
	Ins.
Mean qty. of rain	1·483
Mean of evap.	0·413

Table of the Winds.

	Days.	Dew-P.
N.	3¼	31°·5
N.E.	4¼	27 ·5
E.	1¼	23 ·5
S.E.	2¼	34 ·5
S.	1¼	39
S.W.	6¼	42 ·5
W.	6¼	37
N.W.	4¼	32

SUNDAY LESSONS.

Jan.	MORNING.		
5	2 Sun. aft. Ch.	Isaiah 41.	Matt. 4
6	Epiphany	60.	Luke 3 [to v. 23
12	1 Sun. aft. Ep.	44.	Mat. 10
19	2 „	51	„ 17
26	3 „	55	„ 23
	EVENING.		
Jan.	5 Isaiah	43...Rom.	4
„	6 „	49...John	2 to v. 12
„	12 „	46...Rom.	10
„	19 „	53...1 Cor.	1
„	26 „	56... „	7

THE MOON'S CHANGES.

New . . . 4th day, 9h. 20m. aft.
First Quart. 12th day, 7h. 58m. mn.
Full . . . 19th day, 0h. 34m. mn.
Last Quart. 26th day, 1h. 34m. aft.

Day of Mth.	Length of Day.	Day's increase	Day break.	Twil. ends.	Sun's Semi-di.
	h. m.	h. m.	h. m.	h. m.	′ ″
1	8 46	1 0	5 51	6 36	16 16
6	8 30	0 45	5 55	6 28	16 16
11	8 17	1 1	5 59	6 21	16 17
16	7 56	0 32	6 2	6 14	16 17
21	7 50	0 22	6 3	6 9	16 17
26	7 36	0 11	6 3	6 5	16′ 17″

*** The Office of the Society for the Diffusion of Useful Knowledge is at 59, Lincoln's Inn Fields.
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